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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/787,838	03/22/2001	Joannes Baptist Adrianus Dionisius Van Zon	PHN 17,557	7507

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PHILIPS INTELLECTUAL PROPERTY & STANDARDS
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EXAMINER
WILLE, DOUGLAS A

ART UNIT	PAPER NUMBER
2814	

DATE MAILED: 07/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/787,838	VAN ZON, JOANNES BAPTIST ADRIANUS DIONI	
	Examiner	Art Unit	
	Douglas A Wille	2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 May 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *33-37,39 and 42-52* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *33-37,39 and 42-52* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 33 – 37, 39 and 42 - 44 are rejected under 35 U.S.C. 102(b) as being anticipated by Gallagher et al.

3. With respect to claim 33, Gallagher et al. show (see cover figure and column 3, line 55 et seq.) a MTJ with a first electrode 10, an insulating layer 20 and a second electrode 30. The second electrode is formed by etching (see Figure 8A and column 9, line 30) and the intermediate stage of the etching will provide the upper layer with a central portion and a peripheral portion surrounding the central portion with the peripheral portion being thinner than the central portion. Layer 16 pins layer 18 (column 4, line 20).

4. With respect to claim 34 the insulating layer is non-magnetic and is Al_2O_3 (column 5, line 1). Note that the 1 – 2 nm insulating layer is covered with an 8 nm Co layer and a 20 nm Pt layer. The atomic mass of Al is less than that of any of the materials in the upper and lower layers.

5. With respect to claim 35, layer 18 is NiFe which is a soft-magnetic material.

6. With respect to claims 36 and 39, Gallagher et al. show a soft ferromagnetic layer 18 and an antiferromagnetic layer 16 in the lower electrode but note that Gallagher et al. show that the layers may be inverted (column 5, line 37) and as part of the intermediate structure during etching the soft magnetic material would be in the central and peripheral portions.

7. With respect to claim 37, see the paragraph just above and note that the later 32 is a hard material.

8. With respect to claim 42, Gallagher et al. show that the pinned layer could be a sandwich of ferromagnetic layers with a metal layer between (column 8, line 33).

9. With respect to claim 43, Gallagher et al. show (see Figure 4C) a protective layer 60 of SiO_2, which is an insulating material, on the insulating layer and contacts layer 30.

10. With respect to claim 44, Gallagher et al. show the protective layer as being the same thickness as the layer 30 (Figure 4C) but since "less than" is infinitesimally different that "the same" and since criticality has not been established, they are regarded as equivalent.

Claim Rejections - 35 USC § 103

11. Claims 45 - 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gallagher et al. in view Ruigrok et al.

12. With respect to claim 45, Gallagher et al. show a basic sensor but do not show a complete device. Ruigrok et al. show a field sensor with a yoke to couple the device to the field. It would have been obvious to include the yoke shown by Ruigrok et al. in the Gallagher et al. device to provide functionality.

13. With respect to claims 46 and 47, since the structure shown by Ruigrok et al. is mechanically unstable (the end at 5 is unsupported) it would have been obvious to include an encapsulant at least in the space between 3a and 3b to stabilize the structure. Note that the Ruigrok et al. structure has a gap 3a' which would be filled with the encapsulant.

14. With respect to claim 48, Gallagher et al. show (see Figure 4C) a protective layer 60 of SiO_2, which is an insulating material, on the insulating layer and contacts layer 30. Gallagher et al. show the protective layer as being the same thickness as the layer 30 (Figure 4C) but since

"less than" is infinitesimally different that "the same" and since criticality has not been established, they are regarded as equivalent.

15. With respect to claim 49, layer 16 pins layer 18 (column 4, line 20).

16. With respect to claim 50, Gallagher et al. show a soft ferromagnetic layer 18 and an antiferromagnetic layer 16 in the lower electrode but note that Gallagher et al. show that the layers may be inverted (column 5, line 37) and as part of the intermediate structure during etching the soft magnetic material would be in the central and peripheral portions.

17. With respect to claim 51 the ferromagnetic/antiferromagnetic layers of Gallagher et al. are NiFe and FeMn which are respectively soft and hard.

18. With respect to claim 5, Gallagher et al. show that the pinned layer could be a sandwich of ferromagnetic layers with a metal layer between (column 8, line 33).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas A Wille whose telephone number is (703) 308-4949. The examiner can normally be reached on M-F (6:15-2:45).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmi can be reached on (703) 308-4918. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Douglas A. Wille
Primary Examiner

July 2, 2003